



September 27, 2019

Judith Judson, Commissioner
Massachusetts Department of Energy Resources (DOER)
100 Cambridge Street, #1020
Boston, MA 02114

Via Email: DOER.SMART@mass.gov

Re: **SMART Program 400 MW Review, comments on Straw Proposal**

Dear Commissioner Judson:

On behalf of Mass Audubon, I submit the following comments on the Straw Proposal for the next iteration of the Solar Massachusetts Renewable Target (SMART) Program, which provides financial incentives for the development of solar energy projects. We urge DOER to revise the program to avoid, or at least significantly reduce, the amount of forest and farmland that is being converted to large-scale ground-mounted solar arrays, and to better align this program with other Commonwealth programs and goals including the Executive Office of Energy and Environmental Affairs Resilient Lands Initiative and implementation of the State Hazard Mitigation and Climate Adaptation Plan (SHMCAP).

Over the past two decades Mass Audubon has strongly supported solar energy as integral to meeting our state's clean energy goals and addressing climate change, and we continue to support the rapid development of solar and other clean renewables. Climate change is a serious threat to the economic, environmental, and public health of the Commonwealth and the globe. The roles of land use in climate mitigation and adaptation is becoming increasingly apparent, as highlighted in the recent report from the International Panel on Climate Change (IPCC) special report on *Climate Change and Land* (<https://www.ipcc.ch/report/srcc1/>).

The DOER solar incentive programs have exceeded targets at every stage, and the Commonwealth has already well exceeded its goal of 1,600 MW capacity by 2020 – an accomplishment to be applauded. At the same time, thousands of acres of forests and farmland that provide important ecosystem services have been converted to solar arrays over the past several years, and this trend is accelerating. A recent report by Harvard Forest¹ found that as of 2018, 77% of solar arrays in the three counties in the Pioneer Valley had been installed on land that was formerly in a natural condition or farmed. Clark University statewide review found approximately 3,300 acres converted as of 2015². A conservative estimate of total loss of

¹ Johnson, Emily, et. al., *The siting and impact of photovoltaic systems in Franklin, Hampshire, & Hampden counties: A preliminary study*, Harvard Forest, 2019.

² Personal communication

forest and farmland to date based on the installed capacity of 2,480 MW (July, 2019, DOER) and assuming half of this is built on previously undeveloped land, indicates that 6,000 acres or more has been converted to solar arrays. With most of this occurring in the past five years, this accounts for 25% of all land development across the state³.

According to the National Renewable Energy Laboratory, existing rooftops have the potential to support up to 22.5 GW of solar capacity, meeting up to 47% of the total electrical demand.⁴ There are also vast expanses of parking lots where solar canopies could potentially be installed. The incentive program should be adjusted to ensure that the higher cost of these within-development installations are offset in order to make them cost-effective.

The straw proposal for refinements to the SMART program recognizes that there are concerns about land use. It also notes competition between large-ground mounted solar arrays on greenfield sites and small to medium projects within commercial developments. Issues with grid capacity and needs to increase storage and site solar generation close to demand have also been identified. We urge DOER to ensure that programmatic adjustments are made in a manner that is sufficient to address these issues.

Massachusetts Leadership on Climate Change

Massachusetts is a leader in tackling climate change, adopting groundbreaking laws such as the Global Warming Solutions Act, Green Communities Act, and the 2018 \$2.4 billion Environmental Bond that, among other things codified the SHMCAP. The Commonwealth has recognized that swift and decisive action is needed both to rapidly reduce carbon emissions and to help our natural and built communities adapt to unavoidable impacts already underway, including increasing storm intensities and more frequent droughts.

Chapter 7 of the state's Plan focuses on the importance of Nature-Based Solutions for Hazard Mitigation and Climate Adaptation.

Nature-based solutions (NBS) are defined as: The conservation, enhancement, and restoration of nature to reduce emissions, adaptation, and enhance resiliency. These types of solutions use natural systems, mimic natural processes, or work in tandem with traditional engineering approaches to address natural hazards like flooding, erosion, drought, and heat islands.

Massachusetts is fortunate to have 60% of its land in forest. This land cover type is the most efficient at absorbing and filtering precipitation and preventing erosion, while providing a host of other benefits including water supply recharge, cooling and windbreaks, wildlife habitat, clean air, recreation, and a high quality of life. Inappropriate siting of solar arrays conflicts with the Commonwealth's established goals, policies, and direct funding programs for natural and historic resource protection.

Program Goals and Plans

A plan for the DOER solar incentive program needs to be established within a framework that harmonizes it with other important state priorities and programs, notably the Commonwealth's commitment to land conservation and its recognition of the important functions and values that natural lands and farmlands provide, including carbon sequestration and resilience to the unavoidable impacts of climate change that

³ Based on a statewide development rate of 13 acres/day from Mass Audubon's *Losing Ground: Planning for Resilience*, 2014.

⁴ Gagnon, Pieter, et.al., *Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment*, Technical Report NREL/TP-6A20-65298, January 2016.

are already underway. Goals should be established for a high percentage of the overall solar capacity to be developed within development sites (existing or new rooftops, parking lots, etc., and on brownfields, previously mined sites, or other redevelopment sites). Incentives should be adjusted to prevent financing the conversion of high value conservation lands to large-scale solar arrays. Co-siting of solar on farmland that remains in active production is a worthy goal that also has benefits for the economic viability of farms. However, this approach is still experimental and needs to be managed carefully to avoid unintended impacts to farmland soils or productivity. Systems also need to be put in place to track the land use effects of the program in order to provide a basis for evaluation of whether or not the goals are being achieved, and to identify further refinements over time.

We support DOER's goal of increasing incentives for behind-the-meter installations and other measures to increase siting of solar generation at locations where there is a demand load. The proliferation of large-scale distributed generation at rural sites remote from loads only increases pressures on an already outdated and overburdened electrical grid. Expanding the grid to allow more remote interconnections also has other environmental impacts, associated with clearing and maintaining new or widened transmission rights-of-way.

It is unclear whether the proposed increase in subcontractors for greenfield developments will significantly reduce the scale and rate at which these projects are consuming forests and other undeveloped lands. Merging the East and West Eversource capacity blocks is likely to exacerbate solar sprawl in western Massachusetts.

DOER needs to step back and review the big picture with other Executive Office of Energy and Environmental Affairs (EEA) agencies and municipalities, establish programmatic goals that work with the state's goals for land use, and then revise the program accordingly.

Municipal Planning and Capacity

The program also needs to better address the needs of and challenges faced by rural and suburban communities with small budgets and limited capacity to address the emergence of a new industry and its associated land use impacts. Many smaller communities rely on citizen volunteers to run their local boards and committees, and they often do not have full time planning staff. I have received many inquiries from local officials and residents across the Commonwealth struggling to respond to proposed industrial-scale solar development projects they were not anticipating and were ill-prepared to regulate. Sites that lack water supply and wastewater disposal capacity for residential or other forms of development, and that therefore had been at little risk of development for decades, are suddenly being seen as prime sites for solar arrays, since the cost of acquiring or leasing such lands is typically low. Sites that have shallow soils and/or steep slopes are also leading to problems with excessive runoff and erosion – issues that are exacerbated by increasing storm intensities associated with climate change.

Recommendations

Mass Audubon recommends that DOER take the following actions to eliminate these conflicts while promoting the continued, rapid development of solar energy:

- Coordinate with EEA to develop a robust, publicly-accessible database of solar energy projects to track land use effects.
- Modify the program to eliminate or at least greatly reduce new impacts to lands the state has identified as high conservation value. MassWildlife's BioMap 2, a scientifically-based land planning blueprint, and other available GIS data can readily be utilized for this purpose.
- Coordinate with the EEA Resilient Landscape Initiative currently underway.

- Increase adders or other incentives for co-locating solar facilities within development sites (rooftops, parking lots, large lawn areas such as within office parks or highway verges and medians) and on redevelopment of brownfields and mined sites where little to no soil or natural vegetation exists.
- Ensure, with carve-outs or other provisions, that capacity is available for small- and medium-scale commercial and industrial projects on existing development sites, and that the administrative provisions for these systems do not make them noncompetitive with large stand-alone arrays.
- Carefully monitor the application of dual-use agricultural solar projects, to ensure that the affected farmlands do in fact remain in viable, active production.
- Pollinator habitat certification may be helpful, but it does not compensate for lost forest. The details of this aspect of the program need to be subjected to public review before it is adopted as part of the solar incentive program. Ongoing maintenance and recertification requirements need to be included.

Thank you for considering these comments.

Sincerely,

A handwritten signature in black ink that reads "E. Heidi Ricci". The signature is written in a cursive style with a prominent flourish at the end of the name.

E. Heidi Ricci
Assistant Director of Advocacy